



**STATE OF MONTANA
MONTANA DEPARTMENT OF TRANSPORTATION
JOB PROFILE**



Update



Formal Review

Date Submitted _____

SECTION I - Identification

Working Title: Pavement Analysis Engineer

Department: Transportation

Job Code Number: 172017

Division & Bureau: Materials Bureau,
Engineering Division

Job Code Title: Engineering Supervisor Manager

Section & Unit: Pavement Analysis Section

Pay Band: 7

Work Address: 2701 Prospect Avenue
PO Box 201001
Helena, MT 59620-1001

Position Number: 40093

Phone: 406-444-7260



FLSA Exempt



FLSA Non-Exempt



Non-Union



MPEA



Blue Collar

Profile Completed By: Matthew R. Strizich

Work Phone: 406-444-6297

Work Unit Mission Statement or Functional Description:

The Highways and Engineering Division prepares projects for bidding and coordinates highway construction. The division is made up of the Materials, Construction Administration Services, Construction Engineering Services, Contract Plans, Right-of-Way, Bridge, and Preconstruction Bureaus; the CADD Systems and Engineering Management Support Sections; and five District Construction Offices in Missoula, Butte, Great Falls, Glendive, and Billings for budget and workforce purposes.

The Pavement Analysis Section is responsible for operating a Pavement Management System (PvMS) to improve the efficiency of decision making, provide feedback on the consequences of decisions, and facilitate the coordination of Department pavement activities. The Section ensures the consistency of decisions made at different levels within the Department in reference to pavement construction, rehabilitation, and maintenance by developing or approving all surfacing designs. Work encompasses preconstruction, construction, and post-construction maintenance phases of the highway program and includes interaction with the public and outside consultants.

Describe the Job's Overall Purpose:

Serves as the Pavement Analysis Section's Section Supervisor in directing and overseeing the operation of MDT's Pavement Management System, Surfacing Design, and pavement condition data collection operations. Oversee the operation of a modern Pavement Management System. Output from this section will identify pavement reconstruction, rehabilitation, restoration and repair and maintenance strategies for all pavements under the jurisdiction of the department. Establish guidelines, procedures, and parameters for these activities. Provide advanced technical assistance to a variety of individuals and agencies involved with ongoing road construction projects; and perform a variety of other duties in support of Department goals and Division objectives.

<i>SECTION II - Major Duties or Responsibilities</i>	<i>% of Time</i>
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<i>A. <u>Project Planning and Oversight</u></i>	<i>70%</i>
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1. Provides long-range planning and oversight for major Section projects to ensure the most efficient, cost-effective, and otherwise appropriate use of human and material resources.
 - Resolve problems, making decisions, and developing procedures associated with planning and managing pavement and surfacing engineering designs, construction, subsurface investigations, testing, and quality control programs; ensuring conformance with professional engineering, safety and quality standards and regulations; and incorporating input regarding quality, cost, performance, and other issues.
 - Determines appropriate processes for ensuring methods, timelines, reporting requirements and other factors are met based upon site-specific circumstances, Surfacing Design and Pavement Management standards, State and Federal requirements, available resources, and other considerations; managing and overseeing process and product implementation; and resolving engineering, procedural, and compliance deficiencies.
2. Evaluate multiple and variable program needs; engineering, quality, cost, and safety standards; operational requirements; and other factors to plan and manager effective quality control programs, analysis, training, and inspection.
 - Coordinates and oversees statewide implementation of programs involving Department construction, laboratory, design and maintenance functions; consultants and contractors; and other considerations.
 - Resolve the most advanced surfacing and pavement management design, analysis, and data collection issues referred by subordinate staff, consultants, MDT managers, and others.
3. Directs technically and professionally, the data collection and data management of the miles of lanes of the State maintained highway system to insure the condition of the roadway, relative to visual distress such as rutting, cracking and surface texture, is accurately reported and analyzed to produce pavement inventory reports, pavement condition reports, project candidate and priority reports. This information will be used by a wide variety of staff within MDT.
 - Coordinates training to permanent and temporary employees, monitors performance and occasionally checks data for accuracy and completeness.
 - Directs the development of a pavement condition rating manual and annual updates to identify pertinent pavement distress and collection format by training and assisting personnel.
 - Oversee the scheduling and monitoring of the road profiling, skid testing, non-destructive testing (FWD), and pavement rating to insure schedules are met and the proper information is gathered. Schedules and directs the pavement rating and pilot vehicle

- personnel.
 - Identifies and implements alternative uses and requirements for pavement data collected.
4. Supervises and directs the analysis of the pavement condition data to produce information used by MDT management to nominate projects, determine optimum rehabilitation strategies, develop construction and maintenance budgets, and provide program justification to the Legislature.
 - Develops remaining service life curves for a variety of roadways throughout the state that will predict the optimum time to make the most efficient and economical repairs and rehabilitation.
 - Insures the computer environment within PMS is commensurate with the analysis performed, makes recommendations in program changes to assure maximum efficiency and innovation.
 - Conducts annual Repair Strategy Committee meetings to assure that PMS costs and strategies are current using input from MDT construction, maintenance and design personnel.
 5. Directs the development and writing of the annual "Pavement Condition and Treatment Report" to be used by MDT Management to prioritize and program projects and justify levels of construction and maintenance funding from the Legislature.
 - Analyzes collected condition data for trends in remaining life curves, performance of new and innovative construction procedures and provides an overall picture of the condition of the state's roads.
 - Observes, anticipates and predicts future pavement conditions and needs to optimize rehabilitation techniques.
 6. Administers and directs project by project surfacing designs.
 - Ensures surfacing designs are developed based on complete information from the field and most up to date analysis programs.
 - Researches and directs the implementation of alternative surfacing technology.
 - Makes economic comparisons of alternative surfacing.
 - Provide information required for Consultant Design project development and review of Consultant Design recommendations.

B. Supervision and Staff Development

25%

1. Manages technical and professional staff in establishing work plans, priorities, and procedures; developing and recommending overall responsibilities and allocation of staff; coordinating assignments through subordinate lead workers; handling disciplinary actions and resolving conflicts; and hiring and training staff as necessary. Determine duties and responsibilities of subordinate positions and evaluating performance.
 - Ensures that staff complies with State and departmental personnel procedures and policies, employment law, unions, program requirements, and personnel management practices and techniques; directing, organizing, and coordinating multiple staff, complex sampling and testing procedures, and a variety of equipment; effective written and verbal communication skills; and skill in the use of standard office software applications for correspondence, scheduling, information management, and other tasks.
 - Provides directions to motivate staff toward common goals and objectives.
2. Establishes and revises overall work plans, priorities, and procedures and monitors progress through meetings and consultations.

- Conducts staff meetings, disseminates data, and promotes information exchange to support and advance the goals and objectives of the Bureau.
3. Identifies staffing needs to recruit and hire employees. Participates in recruitment and selection committees for the Section.
 - Develop selection criteria and interview questions, participating in interviews, developing test questions, scoring answers to verbal tests; and making hiring decisions.
 - Ensures compliance with State and federal employment and civil rights law throughout the hiring process, assigning personnel screening and selection committees, reviewing results and making final recommendations for hiring, and ensuring proper training and orientation of new employees.
 - Schedules and directs the hiring of the temporary pavement rating and pilot vehicle personnel following the proper selection process.
 4. Establishes objective, measurable, and observable performance standards for all subordinate positions.
 - Monitors and manages the performance of all positions directly supervised and completes performance appraisals.
 - Implements and monitors corrective actions, including disciplinary measures. Ensures staff compliance with State and departmental personnel rules, regulations, and policies.
 5. Develops and presents training programs for agency staff to provide general and specialized information related to geotechnical engineering, including design considerations, safety factors, and project parameters that may be affected by changing geotechnical conditions.
 - Develops specialized programs to inform Section staff of changing procedures, techniques, equipment, and other issues affecting ongoing field, office, and laboratory operations and activities.
 6. Performs a variety of other supervisory responsibilities, including signing time slips and approving leave requests, maintaining filing systems, ensuring the effective distribution of reports and documentation, and other tasks necessary to ensure effective personnel management.

C. Other Duties

05%

- Performs a variety of other engineering, project management, and other activities as assigned by the Materials Engineer in support of the Department mission and Division objectives.
- Perform the duties of the Materials Engineer during absences; exchanging information with contractors, agency staff, and the public; providing training, education, and professional and technical assistance; directing special projects; and attending ongoing education and training as directed.

The following duties and/or specific tasks listed under section II above are considered “essential functions” because they require specialized expertise and skill and are the primary reasons the job exists (they must be performed by this position with or without accommodations):

Duty A: Project Planning and Oversight

Duty B: Supervision and Staff Development

The following mental and physical demands are associated with these essential functions:

PHYSICAL

- Lifting and transporting supplies, samples and equipment in excess of 10 pounds.
- Carry light items (papers, books, small parts)
- Remaining seated for extended periods of time, with occasional walking; standing; bending
- Travel within the state to project locations, and out of state travel by airline to national conferences and meetings.
- Field work and the associated hazards and demands;
 - Asphalt fumes
 - Traffic
 - Extreme weather and driving conditions
 - Loud noises
 - Overhead construction equipment
 - Traversing rough terrain
- Operating a personal computer.
- Communicate in writing, in person and over the phone.

MENTAL

- Ability to multi-task
- Demands for accuracy in all aspect of work
- Ability to meet inflexible deadlines
- Decision making that affects public health and safety
- Computing arithmetic operations
- Comparing data
- Compiling information
- Analyzing
- Coordinating
- Synthesizing
- Negotiating
- Instructing

Does this position supervise others? ☒ **Yes** ☐ **No**

Number directly supervised: 3

Position Number(s) of those supervised: #40080, #40012, and #40072

Indirectly supervise four engineers (4.0 FTE) and multiple Materials Lab Specialists and temporary aides (7.14 FTE).

Attach an Organizational Chart.

SECTION III - Minimum Qualifications - List minimum requirements for the first day of work.

Critical knowledge and skills required for this position:

KNOWLEDGE:

Extensive knowledge of the concepts and theories of engineering, materials properties, mathematics, the physical sciences, and highway and bridge design; methods and practices of highway construction and construction engineering; engineering policy; geology, specifications and test methods; and construction safety practices. The

position also requires thorough knowledge of contract law and contract administration, traffic engineering; highway economic, safety, and efficiency issues; Engineering Division objectives and Materials Bureau goals; project planning; research methods and techniques; state, federal, AASHTO, and FHWA requirements and standards; project specifications; the Montana Materials Manual, Construction Manual, Traffic Engineering Manual, Standard Specifications for Road and Bridge Construction, and a variety of other specialized engineering manuals and documentation; highway construction methods and techniques; transportation planning, design, and highway construction processes; field applications of highway engineering and construction; environmental rules and regulations; and construction methods and practices.

Guidelines, manuals, and other written procedures available to the incumbent include materials design specifications, Surfacing Design Manual, FHWA design manuals, Engineering Division policies and practices, State and Federal standards, American Association of State Highway Transportation Officials (AASHTO), American Society of Testing and Materials (ASTM), Montana Standard Specifications for Road and Bridge Construction, and manuals for the various Bureaus and units of the Divisions (e.g., Materials, Construction, Right-of-Way, Bridge, Preconstruction, etc.)

Knowledge of the principles and practices of pavements; pavements and pavement performance; mathematics; principles of systems and system analysis; life-cycle costing methods, engineering judgment and computer technology, statistics, report writing, computer graphics, tables, spread sheets, bar charts, pie charts and user defined customized reports.

SKILLS:

Requires skill in reading and interpreting complex plans, specifications, and contract documents; project management; drawing conclusions and making recommendations; assessing construction plans and projects; communication and negotiation; developing and administering a variety of diverse projects and functions; and developing solutions for complex problems. These duties also require the incumbent to apply skills in communication and negotiation; developing and administering a variety of diverse projects and functions; and developing ideas and solutions for complex problems.

Behaviors required to perform these duties:

See MDT Core Behaviors

Education:

Check the one box indicating minimum education requirements for this position for a new employee the first day of work:

- | | |
|---|--|
| <input type="checkbox"/> No education required | <input type="checkbox"/> Related AAS/2-years college/vocational training |
| <input type="checkbox"/> High school diploma or equivalent | <input checked="" type="checkbox"/> Related Bachelor's Degree |
| <input type="checkbox"/> 1-year related college/voc. training | <input type="checkbox"/> Related Master's degree |

Please specify the acceptable fields of study:

Acceptable: Civil Engineering or related engineering degree.

Other education, training, certification, or licensing: Licensure as a Professional Engineer is required.

Experience:

Check the one box indicating minimum work-related experience requirements for this position for a new employee the first day of work:

- | | |
|---|---|
| <input type="checkbox"/> No prior experience required | <input type="checkbox"/> 3 years |
| <input type="checkbox"/> 1 year | <input checked="" type="checkbox"/> 4 years |
| <input type="checkbox"/> 2 years | <input type="checkbox"/> 6 |

Other specific experience: Experience in highway and surfacing design, pavement management or transportation planning with two years in a supervisory capacity.

Alternative Qualifications:

This agency will accept alternative methods of obtaining necessary qualifications.

- ☐ Yes ☒ No

SECTION IV – Other Important Job Information

- | | |
|--|--|
| <input type="checkbox"/> Fingerprint check | <input checked="" type="checkbox"/> Valid driver's license |
| <input type="checkbox"/> Background check | <input type="checkbox"/> Other; Describe |

Other information including working conditions such as shifts, lifting requirements, travel or hours.

SECTION V – Signatures

Signature indicates this statement is accurate and complete.

Employee:

Name: _____ Title: _____

Signature: _____ Date: _____

Immediate Supervisor:

Name: Matthew R. Strizich _____ Title: Materials Engineer _____

Signature: _____ Date: 1/8/14 _____

Bureau Chief:

Name: Matthew R. Strizich, PE _____ Title: Materials Engineer _____

Signature: _____ Date: _____

Division/District Administrator:

Name: Dwane Kailey, PE _____ Title: Chief Engineer _____

Signature: _____ Date: _____

Department Designee:

Brent Rabee/Designee
Chief Human Resources Officer
Human Resources Division

Signature: _____ Date: _____